Installation and User's Guide

TowerFeed™ for Brother HL-7050

Rutishauser

IU 683 / 0402

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USER'S MANUAL

TowerFeed™ 444 for Brother HL-7050

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PREFACE

Thank you for selecting a Rutishauser product. TowerFeed is a superior sheet feeder specifically designed to extend the paper handling capabilities of your Brother laser printer. We encourage you to read this manual carefully to ensure correct installation and satisfactory operation.

TowerFeed is a demand feeder that makes it possible to have multiple types and sizes of paper available “on-line."
In Windows 3.1, paper selections are made with TowerFeed Windows Software. For non–Windows environments, the control is done within the application software through the use of feed commands.
For print jobs without feed commands, the printer will receive paper from the top-most TowerFeed tray (Default Paper).

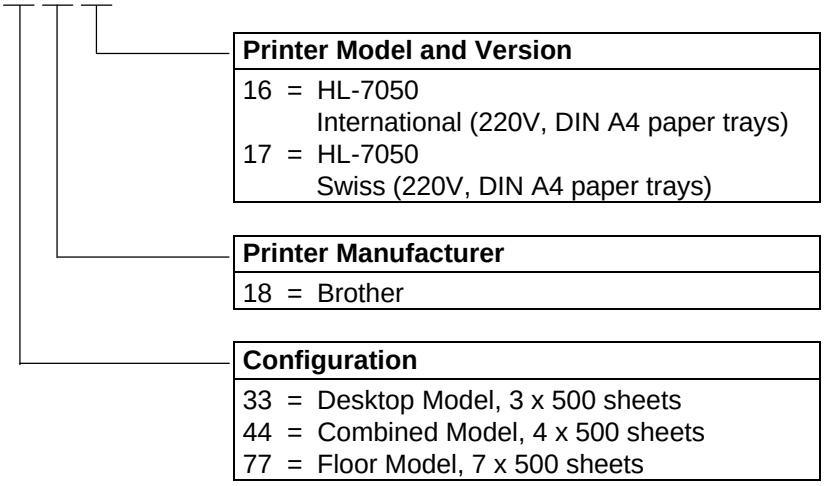
Communication between the printer and TowerFeed is through the RS-232 port, thus offering the following characteristics:

- The installation is made easy. "Plug and Play"
- The printer can have internal or external network cards.
- Port switching is possible
- There is no reduction of the speed of data flow from the computer to the printer.

While installing TowerFeed, or whenever an unclear situation arises, please also consult the user's manuals of the printer, your host computer system and your application software.

The name TowerFeed is generic to the TowerFeed family of feeders and is used throughout this manual. TowerFeed has this model number scheme:

TowerFeed 444/xx.18.1y


Printer Model and Version
16 = HL-7050
International (220V, DIN A4 paper trays)
17 = HL-7050
Swiss (220V, DIN A4 paper trays)
Printer Manufacturer
18 = Brother
Configuration
33 = Desktop Model, 3 x 500 sheets
44 = Combined Model, 4 x 500 sheets
77 = Floor Model, 7 x 500 sheets

For example: TF 444/77.18.16 is an international version with 7 DIN A4 paper trays.

A plate showing type, designation and serial number is located besides of the power inlet of TowerFeed. Please refer to this designation and the serial number whenever you call your service organization.

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Other products and brand names mentioned are trademarks or registered trademarks of their respective companies.

UNPACKING

Note:
Prior to delivery, your TowerFeed was thoroughly tested and carefully packaged.
Please check your unit for transportation damage and/or missing parts immediately upon receipt.

It is advisable to get a second person to help you unpack the unit.

Warning:
TowerFeed may weigh up to 36 kilograms (80 pounds) depending on configuration.
To prevent back strain or injury, bend your knees when lifting the unit, and get help if you need.

To unpack the TowerFeed unit, proceed as follows:

- Cut the packing strips and remove the top of the shipping container (Fig. 1).
- Remove the four blue shock absorbers from the unit corners.
- Desktop unit: Carefully lift the TowerFeed from the lower container.
  Floor model: Lay the unit on its side and carefully pull off the lower part of the shipping container (Fig. 2).
- Remove the accessories box. It contains the rollers (floor and combined models only), the power and data cable, a CD Rom and the start instructions.
- Floor model: Insert the rollers from the accessories box with some force onto the shafts on the TowerFeed bottom plate until they snap into position with an audible click (Fig. 3).
- Combined model: If you prefer to use your TowerFeed as desktop model, remove (unscrew) the roller shafts underneith the bottom plate. There are already 4 rubber feet installed for this purpose.
  For floor use insert the rollers from the accessories box with some force onto the shafts on the TowerFeed bottom plate until they snap into position with an audible click (Fig. 3).
- Stand up the TowerFeed unit (Fig. 4).
- Remove the plastic from TowerFeed.

Warning:
For reshipping TowerFeed, you must use the original packing to avoid shipping damage of the unit.

Re-packing (Fig.5)

It is recommended that you keep the packaging material and inserts for proper protection of the unit and its parts in case of reshipment.

To repack TowerFeed, follow the above steps in reverse. Be sure that all accessories including manuals and diskettes are packed in the box. Remove the trays and insert the transportation inserts as shown in Fig. 8, page 7 (It is important to secure the trays to avoid possible shipping damage). Place items according to Fig. 5. Ensure TowerFeed is correctly seated and cushioned. Insert the four blue shock absorbers and close the container.

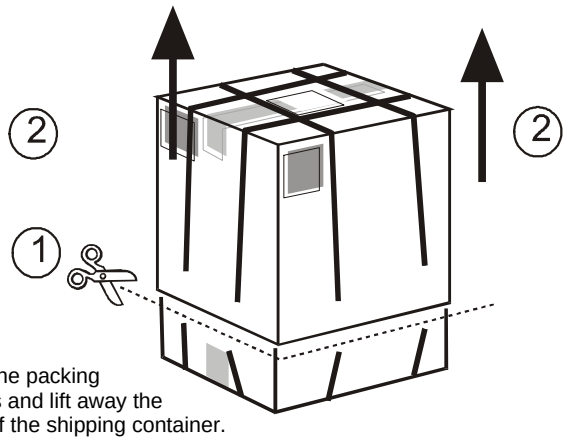

Fig. 1 Cut the packing strips and lift away the top of the shipping container.

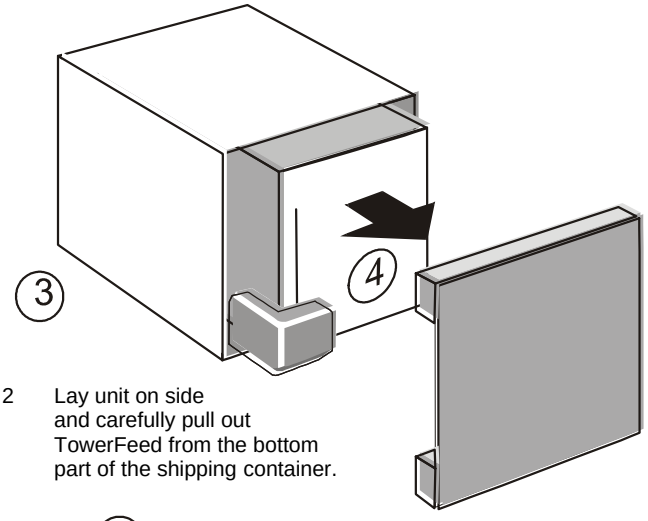

Fig. 2 Lay unit on side and carefully pull out TowerFeed from the bottom part of the shipping container.

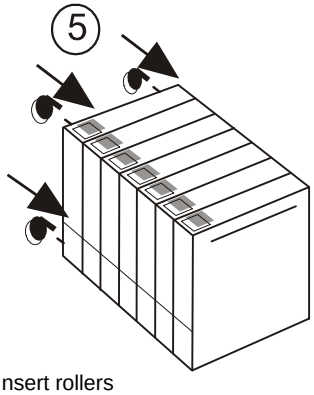

Fig. 3 Insert rollers (floor and combined models only)

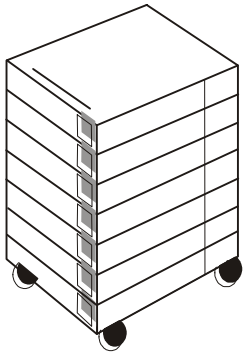

Fig. 4 Stand up TowerFeed and remove wrapping 6

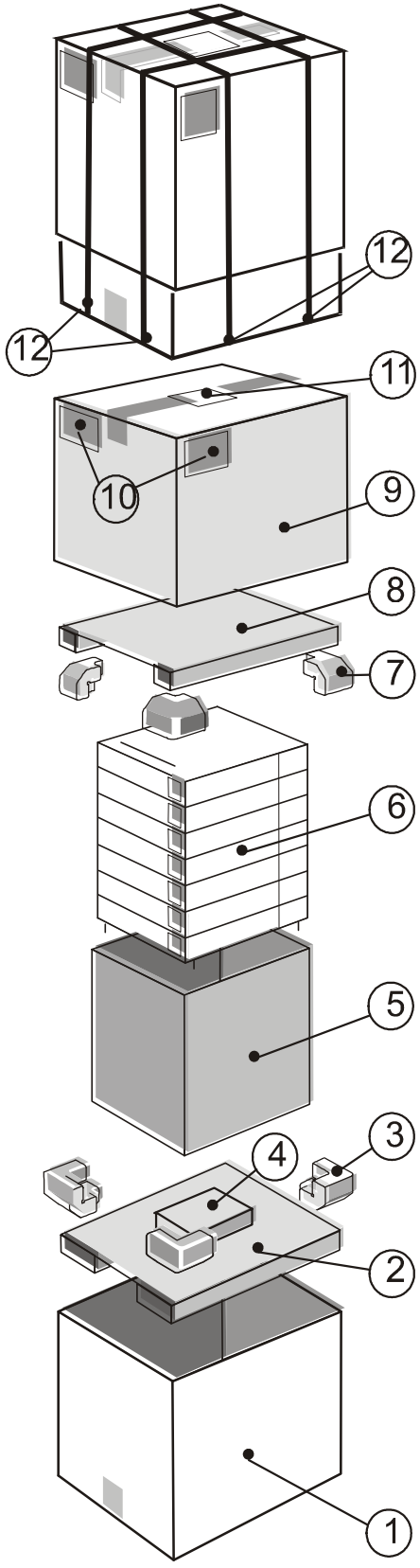

Fig. 5 Re-packing

BOX CONTENTS

Note:
Prior to delivery, your TowerFeed was thoroughly tested and carefully packaged.
Please check your unit for transportation damage and/or missing parts immediately upon receipt.

Box Contents

(1) TowerFeed unit with drawers

(2) Accessories box

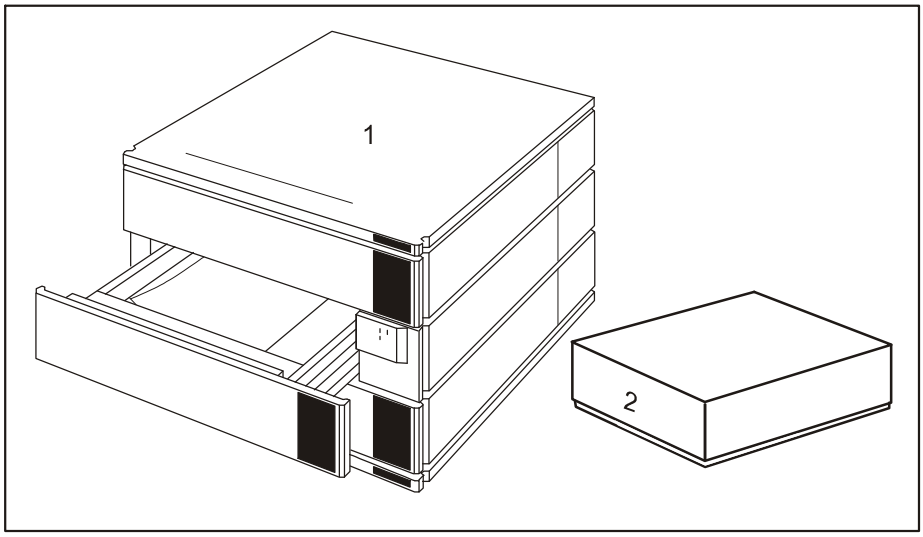

Fig. 6 Box Contents

Accessories Box Contents

(1) Power Cable

(2) Data Cable

(3) 'Getting started' and instructions how to get a TowerFeed manual

(4) TowerFeed CD:
- User's Guide
- Windows drivers

(5) Rollers (Floor and Combined model only)

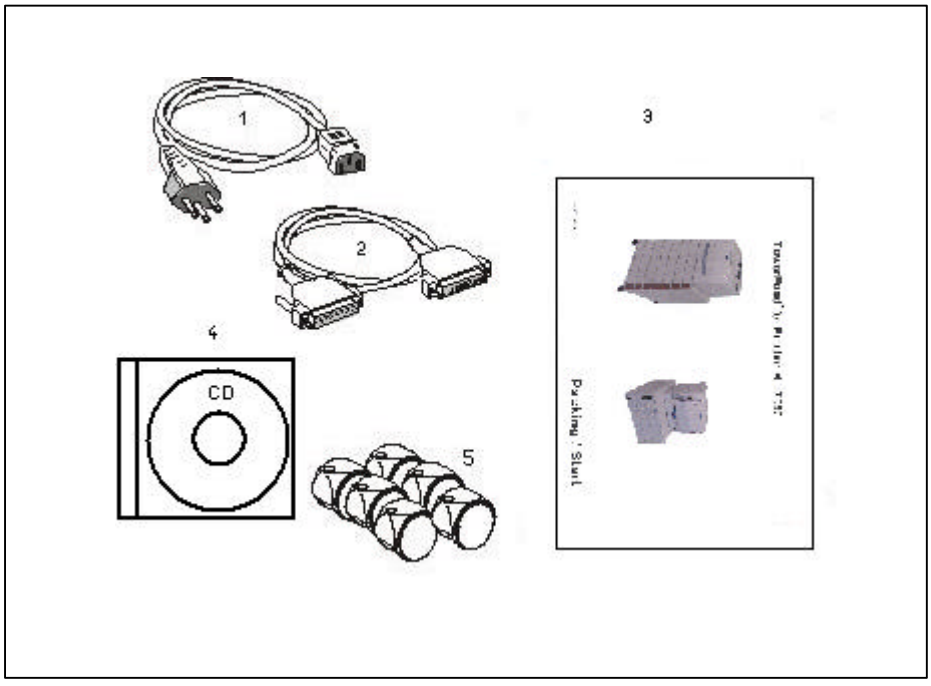

Fig. 7 Accessories Box Contents

Warning:
POWER OFF your printer and TowerFeed and disconnect all power and interface cables before you proceed with the installation.

Hardware Installation

Remove Transportation Inserts

- Pull out, lift upwards and remove the trays from TowerFeed so as to remove the transportation inserts (Fig. 8). There are two at each side (keep the inserts for reshipment).
- Re-insert and close the trays.

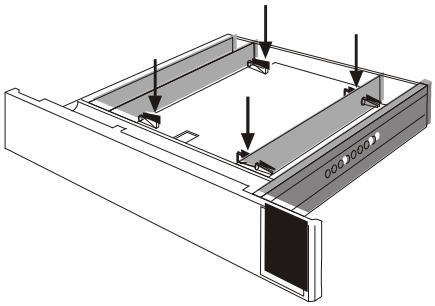

Fig. 8 Removing Transportation Inserts

Note:
Located on the right side of each tray you will find coding pins for the paper size. They are set by the factory and must not be changed.

Position and Connect Printer

Warning:
The printer may weigh up to 25 kilograms (55 pounds). Enlist the help of a second person to lift the unit. To prevent back strain or injury, bend your knees when lifting the unit.

- Place the TowerFeed unit at the location you wish.
  If your TowerFeed is a desktop model, be sure the table or cabinet is level and sturdy enough to carry the load.
  If your TowerFeed is a floor model, be sure to place it on a flat location. *Floor model TowerFeeds especially must be level!*

Fig. 9 Positioning the Printer

Note:
If TowerFeed is not level, paper jams and/or left margin deviation may occur. This is indicated if the left corner of the paper is 'dog eared' or the left edge of the paper is shredded, or the left margin is shifted and the printout skewed.

- Carefully lift the laser printer onto TowerFeed. Place its positioning holes on the positioning pins of the TowerFeed top (Fig. 9).

- Your printer has a centered paper path. Therefore the paper paths of printer and TowerFeed have not to be adjusted like for previous Brother printers.

Electrical Connections

- Connect the RS-232 data cable to the serial port of the printer and to the rear of TowerFeed (Fig. 10).

> **Note:**
> Secure the connectors with the screws to ensure proper connection of the systems.

- Connect the power cables to printer and TowerFeed (Fig. 10).

> **Note:**
> When you power on the system, power on FIRST TowerFeed and then the printer.

> **Caution:**
> When rolling TowerFeed and printer to another place, take care when crossing doorsteps to not have the unit tipping over or TowerFeed trays sliding open.

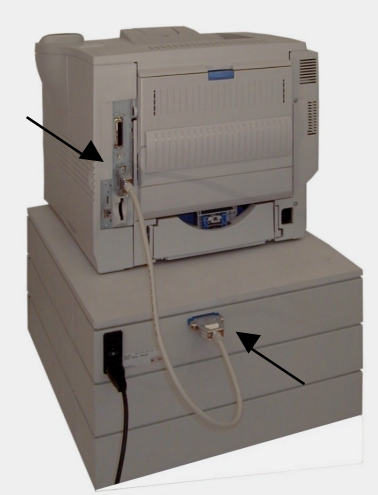

Fig. 10 Connecting the Cables and Location of the Power Switch

TowerFeed Setup

TowerFeed is factory preset for the Brother **HL-7050** printer. Therefore, it is not necessary to run the TowerFeed setup program for this printer type.

Printer Setup

The TowerFeed Option must be selected using the printer panel as following:

- Press and hold the GO button and press the Set button once. The Display will now show HIDDEN PANEL TOWERFEED ON/OFF.
- Press the + or – buttons as many times until the display shows 'TowerFeed ON/OFF'.
- Press SET to enter into this menu item and press + or - until 'TowerFeed=ON' appears.
- Press SET.
- Press GO.

  Now the printer performs a selftest and after this TowerFeed should do a short beep (reset beep of TowerFeed). The option TowerFeed is activated now.

The Interface should be checked/selected using the printer panel (standard setting):

- Press the + button as many times until the display shows --MENU-- INTERFACE
- Press SET once (SELECT INTERFACE)
- Press SET once
- Navigate to the display SELECT =AUTO using the buttons + or -.
- Press SET once
- Press the button BACK twice, the display should show READY.

Software Installation

Installation of Printer Driver

Basically the original Windows drivers of Brother for the HL-7050 can be used (revision 1.59 or later). This except the PostScript driver, which has no TowerFeed extension. Prior to the standard driver installation, an enclosed file has to be copied into your system which allows the driver to show the additional TowerFeed trays.

> **Note:** On the enclosed CD you will find the file **hl705ini.dat**

Insert the CD into your host system, it will start automatically. Navigate according the instructions to the informations of the Brother HL-7050 drivers. Copy the mentioned file into the directory of your host system as indicated on the CD.

Now install the original Brother printer driver which is required for your Windows operating system. You will find the Brother Windows drivers on the CD as well, they were the latest at manufacturing time. If you are looking for later versions please visit www.brother.com .

After successful installation of the printer driver, you will find in *Printer - Properties - Accessories* in the field *available* Options all available TowerFeed models. Select your model (e.g. TF444/77 for the 7-bin model). Hit the *Add* button to install this option to field at the right (Fig.11).

Note: If the TowerFeed models do not appear in the field *available Options*,check the previous step.

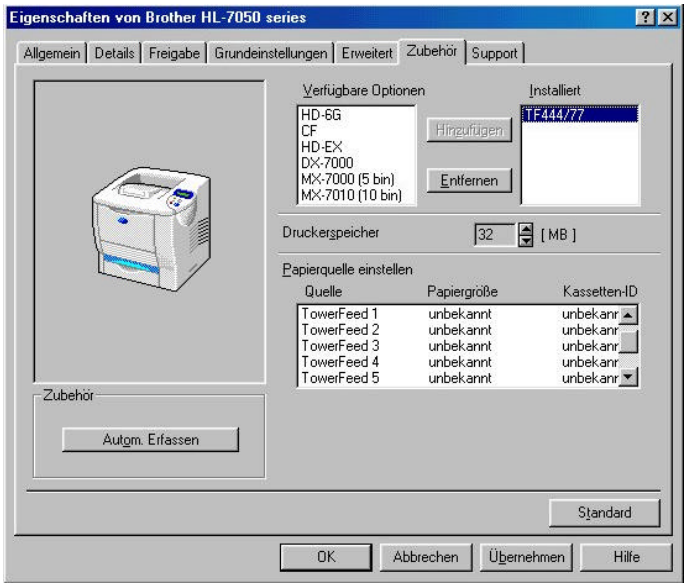

Fig. 11 Printer Properties

Standard Paper Tray

Now switch to the *Printer Properties - Standard Settings* and select in the *Basic* tab the standard paper tray which should be active when no tray selection is done while printing in an application.

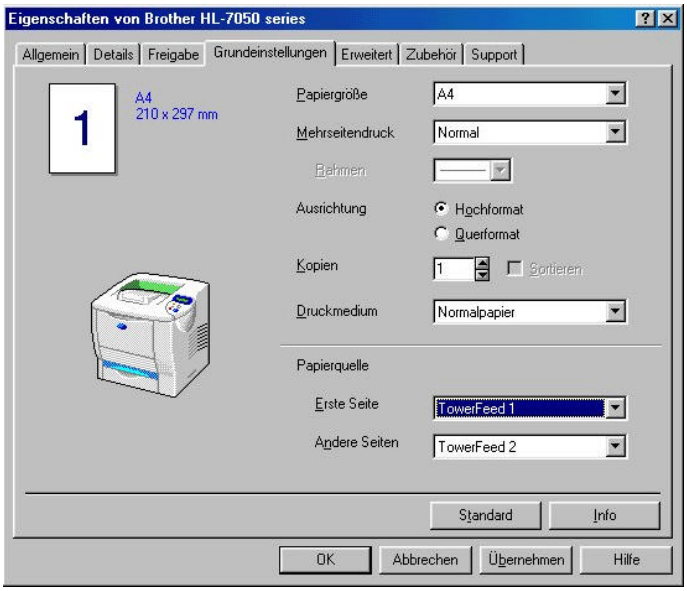

Fig. 12 Printer Standard Tray

Paper Allocation in the Application Program

The application program usually has a Page Setup screen which can be accessed via *File - Page Setup...*. In the *Paper Source* tag you will find the paper source settings for *First page:* and *Other pages:*

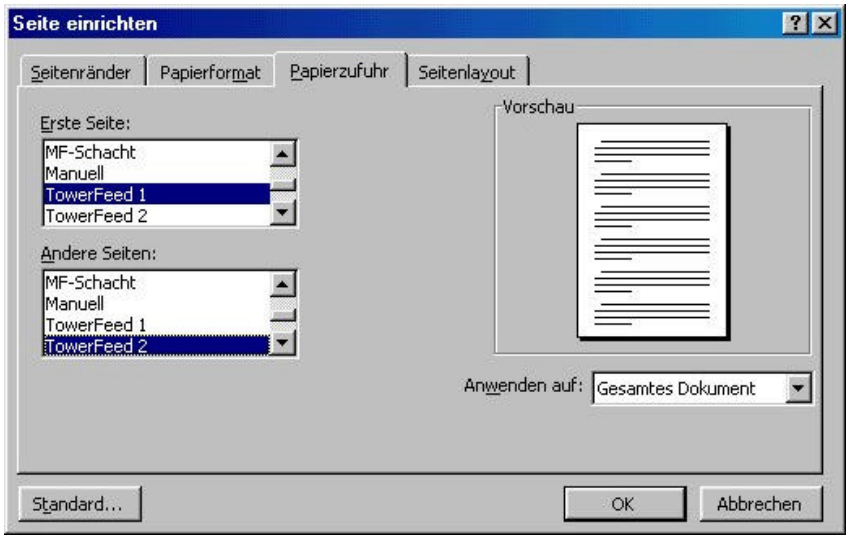

Fig. 13 Page Setup – Paper Source (Word)

The paper source settings in this window are the finally relevant definitions when printing the document.

Note:
For further information on Tray and Media Type definition please also refer to Appendix B - Tips & Hints of this manual.

Loading Paper

- Pull open the tray you wish to load until it reaches the stop or remove it completely for more convenient loading.
- Obtain a fresh ream of paper. Best results will be obtained using regular copier or laser printer paper (see "Paper Quality Guidelines").
  Hold the ream on the long edge and bend it in and out. Repeat on the short edge. Square it off properly (Fig. 14).
- Load letterhead paper face down, with the letterhead towards the front panel.

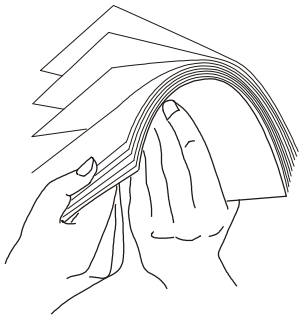

Fig. 14 Fanning the Paper

> **Note:**
> Duplex printing requires different loading of pre-printed paper (please also refer to the instructions in the printer manual).
> *An additional TowerFeed tray will allow to have the same (preprinted) paper in two different trays and available online for regular and duplex printing.*

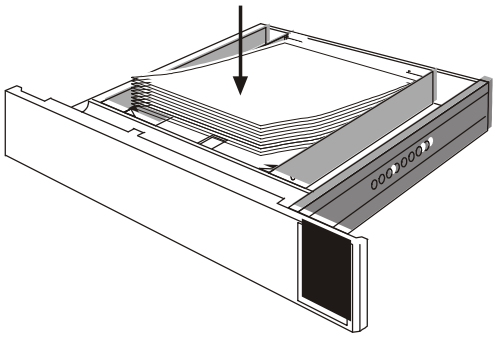

Fig. 15 Filling in Paper

- Insert approx. one third of the ream in the tray and ensure that all paper is lined up with the rear stop. Repeat two more times for the rest of the ream (Fig. 15).
- Push down the stack, such that all sheets are under the separation corners (Fig. 16).
- The right paper guide can be adjusted by pushing the separation corner tab to the left to ensure proper guiding of the paper.
- Push down on the paper stack a few times. The paper must move up and down freely.

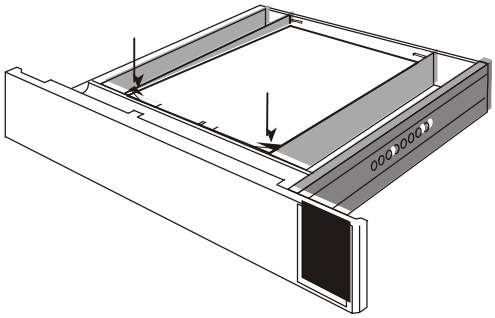

Fig. 16 Correct Paper Loading

> **Note:**
> For your convenience, you may insert a sample piece (about 1 inch/28 mm) of the loaded paper type into the extrusion as a reference when reloading the tray (Fig. 17).

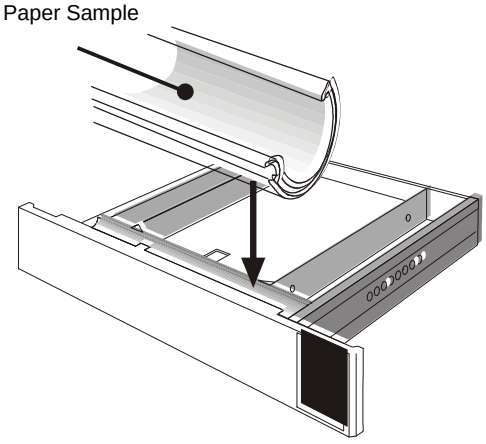

Fig. 17 Marking the Tray

- Close the tray. Repeat the procedure for all trays to be loaded
- TowerFeed is now ready for operation.
  TowerFeed will light the indicators on all feed modules:
  Green: with paper and drawer closed.
  Yellow: no paper or drawer not completely closed.

Reloading Paper

While feeding occurs from a higher tray, lower ones may be reloaded without interrupting feeding and printing. To reload paper, please refer to "Loading Paper ". Once the tray is replenished with paper and closed, TowerFeed will resume feeding.

Out of Paper

- If a TowerFeed tray runs out of paper, the yellow indicator on its front panel is lit.
- TowerFeed will also indicate the Paper-Out condition by beeping as soon as the empty tray is selected. Paper-Out beeping can only be cleared by opening the selected empty tray, reloading paper and closing the tray. Closing the empty tray will activate the Paper-Out beeping again (see Appendix C – Troubleshooting).
- TowerFeed will stop feeding and the printer will stop printing until the selected empty tray is replenished with paper.

Paper Jam

Paper Jam in the Printer

In case of a paper jam in the printer, please refer to the printer operating manual on how to clear the jam in the printer. After closing the printer cover, TowerFeed will automatically feed another sheet and the printer will resume printing.

Paper Jam in TowerFeed (TowerFeed generates beeps in regular intervals)

If a paper jam TowerFeed occurs in the TowerFeed, the printer panel shows a respective error message and TowerFeed will generate beeps in regular intervals (see page 21, TF Beep Types). It will stop feeding and wait for operator intervention. Beeping will continue until a TowerFeed tray is opened.

> **Note:**
> First open the top-most TowerFeed tray for at least 5 cm (2") to stop TowerFeed beeping and prevent additional feed cycles.

- Open each of the TowerFeed trays to locate the jammed paper.
- Remove the jammed paper.
- Do not close the top-most tray until the paper jam has been cleared.
- Close now the top-most tray to indicate that feeding can restart.

TowerFeed will automatically re-feed the same kind of paper as requested before the jam.

PAPER QUALITY GUIDELINES

General

These paper quality guidelines are general recommendations. Paper beyond these specifications may work as well, however it should be tested before use. Paper is a material that reacts intensively to adverse temperature and humidity conditions. The observance of proper conditions as defined below is therefore essential for trouble-free operation of TowerFeed. Please also refer to the corresponding guidelines in the printer manual.

Paper Quality and Surface

Bond type papers and papers with slight rag content are recommended. For papers with high rag content, as well as very light and air mail papers, feeding tests must be conducted to check for satisfactory performance before regular use. Paper with embossed or heavy printing should be tested in TowerFeed before use, as well. Papers with glossy or structured surface are not recommended. Individual sheets in a stack must not be damaged, warped more than 3 mm (0. 12") at an angle of max. 20° or creased, since all these may reduce the feeding performance.

Paper Weight

60 - 95 g / m^2 (16 - 24 lb.). Other paper weights must be tested before use.

Tolerance

Paper must be cut to the appropriate size dimension within a tolerance of +/- 1.0 mm (+/- 0.04"). The paper stack must be cut square to within a tolerance of 90° +/- 0.1°.

Recommended Storage Environment

Temperature: 18°C - 24°C (64°F - 75°F)

Relative humidity: 40% - 60%

Printer Firmware Revision

HL-7050: Every printer firmware version supports the TowerFeed option.

Duplex Option

The printer's duplexing capabilities remain fully supported with the TowerFeed paper handling option installed. When loading the paper please also refer to the printer's user manual for correct tray loading.
In duplex mode, the printer prints the pages in a different order. This requires preprinted paper to be loaded in a different way into the printer's tray.

When using a preprint for both, simplex and duplex printing, an additional paper tray solves the problem. Load one tray for simplex printing and another tray with the preprint loaded for duplex printing.
Now you can select the tray for simplex printing or the one for duplex printing according to your needs. There is no reloading of trays required. Scrap prints and frustrations belong to the past.

Brother Optional 500-Sheet Tray

This option is not supported when the TowerFeed paper handling option is installed.

Paper Selection Command

When receiving a print job without paper selection command, the print job will be printed on paper from the top-most TowerFeed tray. The Windows driver sends a selection command with every page. For 'non-WINDOWS applications' the respective paper selection commands need to be added to the respective programs (see APPENDIX D - TowerFeed Control Commands).

PostScript

The BrotherScript driver allows for the selection of the printer paper sources plus the optional 500-sheet cassette. When selecting paper from the optional 500-sheet tray, TowerFeed will supply paper from its 1st paper tray (top-most drawer). The other TowerFeed paper trays cannot be selected when using the BrotherScript driver.

APPENDIX B - Tips & Hints

Power ON Sequence

Power On TowerFeed first!
When powering on the printer, it will scan its option bus for available options. In case TowerFeed would not be ready at that point in time, the printer shows an error message (Check TF). In this case make sure that the printer and TowerFeed are connected properly. If necessary, power on TowerFeed, wait for the short acoustic TowerFeed signal (Reset Beep) and go on pressing GO on the printer panel.

> **Note:**
> When the printer was not successful to connect with TowerFeed after trying it three times it will automatically deactivate the TowerFeed option. Now the TowerFeed option has to be reactivated via printer panel (see Printer Setup – page 9).

Creating Paper Sequences for a Word Document

It is widely known that in Page Setup you have the possibility to enter different paper sources for *First Page* and *Other Pages*. If there are other pages in the document, which have to be printed on another paper, this can be defined in the same Page Setup window. In this window there is a pull-down bar *Apply to:* which is used for that purpose. The default setting is *Whole document* but there are also the options *This point forward* and *Selected text*, which can be selected.

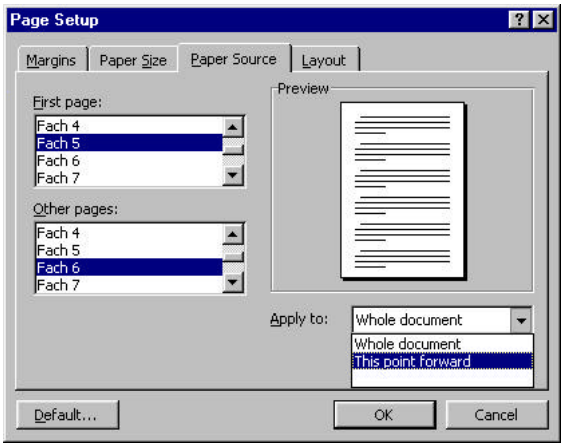

Fig. 18a Page Setup – This point forward

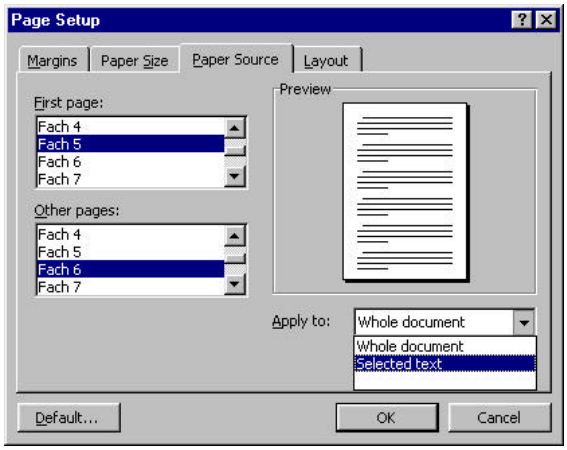

Fig. 18b Page Setup – Selected text

The option *Apply to:* allows to force a change of the paper source for a specific page or from a specific page onwards and thus to define paper sequences for a whole document.

Printing a Document with copies on the Brother Laser Printer with TowerFeed

When printing a document you get either an original copy (copies = 1), or, if you set copies = n, you will get n times the same printout. Usually you want the original document to distinguish from its copies. An elegant method for that purpose is to print the copies on different (color) paper. This can be done by sending the print job several times to the printer but with different page settings. Using a Macro makes this an easy task.

On the next page you find an example of a macro used with a Word document. The macro starts with 'Sub Makro' and ends with 'End Sub'. It consists of several modules (one per copy) which contain the paper definitions for each copy (FirstPageTray = xx; OtherPagesTray = yy).

You can use the Macro Recording function of Word (Extra-Macro-Record) to produce the first module by performing the steps for Page Setup and Print. Then, in Macro Edit mode, you copy/paste this module to have one for each copy to print (one module per copy). Finally you edit the entries in FirstPageTray = xx; OtherPagesTray = yy to the desired paper sources.
This will produce a macro, which prints the document in multiple copies and with the respective page settings. Such a macro can be incorporated into a Menu item or added as icon into the Toolbar.

Hint: When creating and adding a Macro to the Toolbar for automatic printing of the final document with its copies, it might be useful to also create and add a second Macro for easy printing of document drafts on cheap paper.

APPENDIX B - Tips & Hints

The following table shows the internal denominations of the paper sources:

Brother HL-Laser Printer		**Paper Type**
Tray	Denomination	
Upper Paper Cassette	wdPrinterUpperBin	e.g. Letterhead
MP Tray	wdPrinterMiddleBin	
Manual Paper Tray	wdPrinterManualFeed	
TowerFeed 1	257	e.g. Plain
TowerFeed 2	258	e.g. Bond
TowerFeed 3	259	e.g. Color
TowerFeed 4	260	
TowerFeed 5	261	
TowerFeed 6	262	
TowerFeed 7	263	

Example:
The following Word Macro will produce an original document (on company paper) incl. 2 copies (plain and color).

Page	**Original** (Copy 1)	**1st Copy** (Copy 2)	**2nd Copy** (Copy 3)
First Page	Letterhead	Plain	Color
Other Pages	Bond	Plain	Color

Macro Start

```
Sub Macro1 ()

    Macro1 Macro
    Macro recorded 30.01.98 by ...

        With   ActiveDocument.PageSetup
               .LineNumbering.Active = False
               .Orientation = wdOrientPortrait
               .TopMargin = CentimeterToPoints (2.5)
               .BottomMargin = CentimeterToPoints (2)
               .LeftMargin = CentimeterToPoints (3)
               .RightMargin = CentimeterToPoints (1.5)
               .Gutter = CentimeterToPoints (0)
               .HeaderDistance = CentimeterToPoints (1.25)
               .FooterDistance = CentimeterToPoints (1.25)
               .PageWidth = CentimeterToPoints (21)
               .PageHeight = CentimeterToPoints (29.7)
               .FirstPageTray = wdPrinterUpperBin
               .OtherPagesTray = 258
               .SectionStart = wdSectionNewPage
               .OddAndEvenPagesHeaderFooter = False
               .DifferentFirstPageHeaderFooter = False
               .VerticalAlignment = wdAlignVerticalTop
               .SuppressEndnotes = False
               .MirrorMargins = False
        End With
        ActiveDocument.PrintOut
```

```
    With   ActiveDocument.PageSetup
           .LineNumbering.Active = False
           .Orientation = wdOrientPortrait
           .TopMargin = CentimeterToPoints (2.5)
           .BottomMargin = CentimeterToPoints (2)
           .LeftMargin = CentimeterToPoints (3)
           .RightMargin = CentimeterToPoints (1.5)
           .Gutter = CentimeterToPoints (0)
           .HeaderDistance = CentimeterToPoints (1.25)
           .FooterDistance = CentimeterToPoints (1.25)
           .PageWidth = CentimeterToPoints (21)
           .PageHeight = CentimeterToPoints (29.7)
           .FirstPageTray = 257
           .OtherPagesTray = 257
           .SectionStart = wdSectionNewPage
           .OddAndEvenPagesHeaderFooter = False
           .DifferentFirstPageHeaderFooter = False
           .VerticalAlignment = wdAlignVerticalTop
           .SuppressEndnotes = False
           .MirrorMargins = False
    End With
    ActiveDocument.PrintOut
    With   ActiveDocument.PageSetup
           .LineNumbering.Active = False
           .Orientation = wdOrientPortrait
           .TopMargin = CentimeterToPoints (2.5)
           .BottomMargin = CentimeterToPoints (2)
           .LeftMargin = CentimeterToPoints (3)
           .RightMargin = CentimeterToPoints (1.5)
           .Gutter = CentimeterToPoints (0)
           .HeaderDistance = CentimeterToPoints (1.25)
           .FooterDistance = CentimeterToPoints (1.25)
           .PageWidth = CentimeterToPoints (21)
           .PageHeight = CentimeterToPoints (29.7)
           .FirstPageTray = 259
           .OtherPagesTray = 259
           .SectionStart = wdSectionNewPage
           .OddAndEvenPagesHeaderFooter = False
           .DifferentFirstPageHeaderFooter = False
           .VerticalAlignment = wdAlignVerticalTop
           .SuppressEndnotes = False
           .MirrorMargins = False
    End With
    ActiveDocument.PrintOut
End Sub
```

Macro End

APPENDIX C - Troubleshooting

Diagnosing an Error Situation

TowerFeed 444 is equipped with a self-diagnosing system with acoustical and optical messages that allow the operator to quickly locate the cause of a problem. Almost every time the problem is due to an incorrect operation or unsuitable paper and is correctable with a few simple steps. The indication for possible errors and situations are as follows:

Printer Display	TowerFeed	Cause	Corrective action
TF PAPER JAM	TowerFeed indicates: 6 beeps in row	Opening of tray while feeding.	Do not open tray while feeding is in progress. Clear paper and close trays. TowerFeed repeats feed cycle.
TF PAPER JAM	TowerFeed indicates: repeated beeping long-long	No Paper – Paper Jam	Check for proper loading of paper (page 12) and for paper quality within specifications (page 14). Clear jam (page 13) and close tray. TowerFeed repeats feed cycle.
TF MOTOR BLOCKED	TowerFeed indicates: repeated beeping short-long	Motor blocked. Paper residue jammed in tray, roller or paper path. High friction.	Remove paper residues. If paper quality out of specifications, change paper. TowerFeed retries after closing the tray(s). Possibly need for service.
TF PAPER OUT	TowerFeed indicates: repeated beeping short-short	Paper-out in selected tray	Replenish paper (page 12) Feed cycle is repeated automatically.
TF PAPER OUT	TowerFeed: yellow indicator lit	open TowerFeed tray	Close the open tray
TF CHECK	TowerFeed: no indicator lit	No power. TF switched off – blown fuse.	Check if power cable is plugged in and TowerFeed powered on. Replace the fuse (located above the power switch).
TF CHECK	TowerFeed: Green indicators lit but no feed		Check if serial interface of Printer is connected properly to TF. Interface setting of Printer is not set to 'AUTO' (see page 9).
JAM A3	Paper Jam when feeding a sheet from one of the lower trays. repeated beeping short-short	A sheet could not be transferred to the printer.	Might be a service on TowerFeed is needed (cleaning and oiling).

APPENDIX C - Troubleshooting

TowerFeed Beep Types

Type 0 (1x short)		TowerFeed Reset Beep (e.g. after Power ON)
Type 1 (short - short)		Paper in TowerFeed paper path after a printer Reset
Type 2 (long - long)		Paper Jam in TowerFeed
Type 3 (short - long)		TowerFeed Motor blocked
Type 4 (loong-loong)		Signal to insert paper for Manual feed. Opening of tray terminates the signal.
Type 5 (6x short)		Opening a TowerFeed tray during a feed cycle

Other Error Conditions

Description	Action
TowerFeed Trays not showing up in *Paper Sources* of the Printer Dialog	Check for correct printer driver (cf. page 10 of this manual)

APPENDIX D – TowerFeed Control Command

Software

The paper selection for TowerFeed is made by control commands (ESCAPE sequences). These commands have to be implemented in the application and the print jobs. The following alternatives can be applied:

- WINDOWS: Using the Windows driver will automatically produce the respective control commands.
- Control by the printer driver (in non-WINDOWS environments)
- Adding the control sequences directly to the print file
- Implementing the control into the application program

The alternatives will be discussed in more details later on.

TowerFeed Programming

For TowerFeed, a set of commands has been defined for various functions. These functions include the actual feed commands and also commands for status interrogation or setup. For typical applications only a subset of the TowerFeed command set is being used:

- Paper selection Direct addressing mode ESC~I 1nZ (n = 1...7, drawer position)

In addition some PCL printer commands are used as well.

TowerFeed Paper Selection Commands (Escape Code Sequences)

Selection	**Command**
TowerFeed Tray 1	<ESC>~I11Z
TowerFeed Tray 2	<ESC>~I12Z
TowerFeed Tray 3	<ESC>~I13Z
TowerFeed Tray 4	<ESC>~I14Z
TowerFeed Tray 5	<ESC>~I15Z
TowerFeed Tray 6	<ESC>~I16Z
TowerFeed Tray 7	<ESC>~I17Z
• Feed from & stay on Printers Tray	<ESC>&I1H
• Feed from & stay on Printers MP Tray	<ESC>&I4H
• Feed from & stay on Printers Lower Tray	<ESC>&I6H

> Note:
> The character following the ”&” and the "~" is a lower case "L", not a ”1”.

The feed commands can be sent with each page or chained together and sent at the beginning of the file.

Example: Feed from drawer 1

		~	l	1	1	Z
Hex:	1B	7E	6C	31	31	5A
Dez:	27	126	108	49	49	90

Control by the Printer Driver

A number of non-Windows software applications such as DOS or UNIX versions of Word Processing provide options to modify their printer drivers for paper feeders such as TowerFeed. Using this method, TowerFeed control can be integrated into the application software.

Implementation of Feed Commands into the Print Data

If the possibility of modifying the printer driver is not provided by the application, the TowerFeed commands can be put into the print data.

Integration of TowerFeed Control into Source Code

If access to the source code is possible, it is recommended to extend it directly by implementing the TowerFeed commands into the source code.

Note:
TowerFeed is using the same paper path as the optional lower cassette of the printer. Therefor it is recommended to switch the printer to its lower cassette (ESC&l5H) prior to sending the TowerFeed command(s).
In case no paper selection command was sent at all, the printer will pull a sheet from the top-most TowerFeed tray.

APPENDIX E – Multi-Part Forms Programming

Multi-Part Forms Programming

Laser Printers offer many advantages but there is one deficiency compared to impact printers, the inability to print multi-part forms.
The use of multi-part forms reduces printing time and permits the use of different paper for distribution and filing purposes. Laser printers usually have only one or two cassettes and therefore it is not possible to provide a simulation of multi-part forms because not enough different paper types are available.
Also, laser printers with a copy command sent to the printer will not allow the switching of the paper source for printing and produce identical copies. As a result, the benefits of multi-part forms are not available.
Now TowerFeed in combination with your laser printer offers an effective way to gain the benefits of multi-part forms printing.

Example:

A one page document has to be printed four times, e.g., a master and three copies, each of which has to be on a different paper type from a different TowerFeed drawer.
The following commands achieve this task:

Start of document:	Reset printer	ESC E
	Specify number of copies	ESC&l4X
	Feed sequence commands	ESC~I11z12z13z14Z
The Document	Print data	
End of document	Specify/(Reset) number of copies	ESC&l1X
	Reset printer	ESC E

Explanation:

- Printer and TowerFeed are reset at the start of the document.
- The number of copies is then set to the desired 4 copies.
- In the feed commands, the command strings for all sheets are strung together as a ”chain”.
  The commands are for direct addressing:

ESC~I11z	Feed from drawer I
ESC~I12z	Feed from drawer 2
ESC~I13z	Feed from drawer 3
ESC~I14z	Feed from drawer 4

After the document is printed, TowerFeed and printer are to be reset to the standard settings.

TowerFeed Selftest Feature

The TowerFeed selftest feature allows to test the TowerFeed unit independently from any printer and computer. With this test you can check for correct paper feeding (horizontal position, skew, jam behaviour).

> **Note:**
> To perform a TowerFeed selftest, remove the printer's paper cassette.

Follow the these steps:

- Power-off TowerFeed.
- Remove the printer's paper cassette.
- Open all TowerFeed Trays (approx. 10 cm is sufficient).
- Power-on TowerFeed.
- Wait until you hear a short beep followed by the clicking of the solenoid activation in every module, and finally the spinning of the motor (approx. 3 sec).
- Close the top-most TowerFeed tray. After a few seconds a sheet will be fed from this tray. You now can mark the position of the left border of the sheet on the TowerFeed top cover (reference for horizontal paper position).
- Pull out the sheet from its waiting position. TowerFeed will automatically feed a next sheet. You now can compare the position of the left border of the next sheet. If it moves up straight in the same position, this is ok. (In case the left position would be different, or moving from left to right (or vice-versa), this might indicate a problem in either the tray, the unit (module) or the paper loading.)
- To test the next lower tray, close that tray before removing the sheet from its waiting position. Now TowerFeed will feed the sheet from that next lower tray. (TowerFeed will always feed the next sheet from its lowest closed tray.)
- To revert to normal operation, power-off and on TowerFeed again with at least on tray closed. TowerFeed will respond with a short 'Reset' beep that it is ready again.

In case error conditions are showing up which are depending on a specific TowerFeed tray, you can swap trays to find out whether a problem exists with the tray itself or whether a specific module is the cause.

> **Note:**
> When performing a printer selftest, TowerFeed will automatically feed a sheet from its top-most paper tray.

APPENDIX G - Cleaning and Maintenance

TowerFeed does not require preventive maintenance. Cleaning of housing and removal of paper dust from within the TowerFeed trays might now and then be indicated.

Clean the outside of TowerFeed with a lightly water-dampened cloth. Do not use detergents to avoid damage of the surfaces.

To **clean the paper trays** from paper dust, completely remove the trays from TowerFeed, remove the paper and use a vacuum cleaner with a soft brush.

> **Warning:**
> To avoid damage to the paper-out sensor arms do not reach into the openings for the paper trays.

Dimensions and Weights:	*Model Designation*	*Width*	*Depth*	*Height*	*Weight*
Desktop Model	TF 444/33.18.xx	480 mm	541 mm	293 mm	20.0 kg
Combined Model	TF 444/75.18.xx	480 mm	541 mm	444 mm	25.0 kg
Floor Model	TF 444/77.18.xx	480 mm	541 mm	714 mm	41.0 kg

Paper Specifications: 60 - 95 g/m^2 (16 - 24 lb.)

Note: Also consult the paper specifications for your printer.

Paper Trays: A4 Portrait (European Size)

Tray capacity: Up to 500 sheets or a stack of 50 mm, whichever, depending on paper weight, is reached first.

Positioning accuracy: For bond type paper typically better than

vertical: +/- 2.0 mm (0.08")

horizontal: +/- 2.0 mm (0.08")

skew: 2.5 mm (0.10")

Temperature:
Operating: 10°C to 32°C (50°F to 90°F)
Storage: -25°C to 50°C (-13°F to 122°F)

Relative humidity (non-condensing):
Operating: 30% to 80%
Storage: 5% to 95%

Note: Observe recommended storage conditions for paper (see 'Paper Quality Guidelines').

Power Requirements:
220 - 240 V~ +/-10%, 50 Hz, 100 mA
or
100 - 120 V~ +/-10%, 60 Hz, 200 mA

Fuse Type: 3.15A slow (5x20mm)

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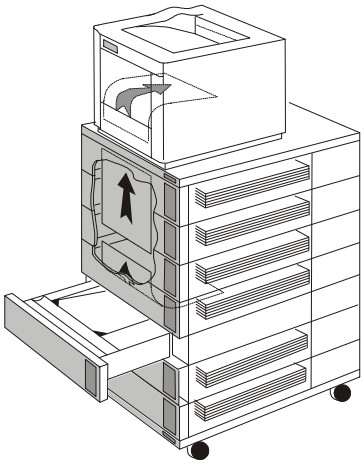

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